

REMARKS

The Applicant respectfully requests entry of the Amendment and the reconsideration of the claims. Claims 41 and 45-53 are amended. Support for these amendments can be found throughout the specification. No new matter has been added through the amendments. Claims 41-54 will be pending in the application. The Applicant respectfully requests reconsideration and withdrawal of the pending rejections under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §§ 102 and 103.

Rejections under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 41-54 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of which Applicant regards as the invention.

The Examiner has taken the position that claim 41 is unclear by reciting a step of extruding rigid thermoplastic onto at least two predetermined areas of said fabric and then reciting a separate step of coating said predetermined areas with rigid thermoplastic to create a composite. The Applicant respectfully traverses. Step (b) of the method of claim 41 recites that a rigid thermoplastic is extruded onto at least two predetermined areas of said fabric. By forcing the rigid thermoplastic through a shaping die, this rigid thermoplastic then coats and impregnates the pre-determined areas as recited in step (c). Although not required by claim 41, this does not preclude an additional coat of rigid thermoplastic onto the pre-determined areas. The Applicant believes that the process involved in making the complex hinged composite structure, having a fabric hinge with fabric composite areas, is clear to convey the claimed invention. In view of the current amendment and the specification, the Applicant respectfully requests the rejection to be reconsidered and withdrawn.

The Examiner has taken the position that claim 42 is unclear by reciting a step of extruding flexible thermoplastic upon said hinged region, while claim 41 (from which 42 depends) recites that the predetermined areas are separated by a linear flexible hinged region free of thermoplastic. The Applicant respectfully traverses. The specification specifically discloses

"[a] first embodiment of the invention being a hinged, structural member" wherein "[t]he rigid areas are joined by at least one flexible region that is either uncoated or coated with flexible thermoplastic." (See specification, p. 5, lines 6-10).

Claim 42 is simply an additional step to utilize an embodiment of the instant invention with a hinged region coated with flexible thermoplastic. This second extrusion is necessitated by the fact that the hinged region requires *flexible* thermoplastic in contrast to the rigid thermoplastic extrusion of claim 41. The Applicant respectfully requests the rejection to be reconsidered and withdrawn.

The Examiner has taken the position that the limitation "the polymer composition" in Claim 45, line 9, does not have sufficient antecedent basis for this limitation in the claim. The Examiner has also taken the position that the limitation "said rigid areas" in claim 45, line 13, does not have sufficient antecedent basis for this limitation in the claim. Claim 45 has been amended to correct the antecedent basis.

The Examiner has taken the position that the limitation "said hinged regions" in claim 46, lines 1-2; claim 48, line 2 and lines 3-4; claim 49, line 1; claim 51, line 9 and claim 53, line 1 do not have sufficient antecedent basis for this limitation in these claims. Claim 45 has been amended to recite "[a] method for making a hinged, composite structure comprising a thermoplastic coated glass fabric and at least one hinged region." Support for this amendment may be found throughout the specification (e.g., p.6, lines 15-16). As amended, the claims have antecedent basis for "said hinged regions."

The Examiner has taken the position that the limitation "said fabric" in claim 47, line 2, claim 48, line 2, and twice in claim 50, line 2, does not have sufficient antecedent basis for this limitation in those claims. The claims have been amended to provide antecedent basis.

The Examiner has taken the position that claim 49 and 52 are unclear by reciting that the fabric of the hinged region is entirely incorporated within said flexible thermoplastic. The Applicant respectfully traverses. The specification teaches co-extrusion of flexible thermoplastic upon the hinged region. For example, the following can be found in the specification at page 9, lines 22-27:

"The flexible thermoplastic polymers used to form the hinge can be coextruded in those predetermined regions of the profile where hinges are desired. Preferably the contemplated flexible thermoplastics optionally used to coat the hinged regions likewise wet, penetrate the fabric, and thermally bond with the surrounding rigid thermoplastic areas during co-extrusion to seal the hinge against penetration by water or noxious atmospheric pollutants..."

The specification clearly discloses the method of claims 49 and 52. In view of the foregoing, the Applicant respectfully requests the Examiner to reconsider and withdraw the rejection.

The Examiner has taken the position that the limitation "said extrusion die" in claim 50, line 3, does not have sufficient antecedent basis for this limitation in the claim. The claims have been amended to correct antecedent basis.

The Examiner has taken the position that the limitation "said hinged fabric regions" in claim 52, line 2, does not have sufficient antecedent basis for this limitation in the claim. The claims have been amended to correct antecedent basis.

In view of the foregoing, the Applicant believes that all claims as currently pending meet the standards required by 35 U.S.C. §112, second paragraph. The Applicant respectfully requests the Examiner to reconsider and to withdraw all rejections relating to 35 U.S.C. §112, second paragraph.

Rejections under 35 U.S.C. § 102

Briefly, the prior art cited by the Examiner does not show a composite structure having a fabric polymer composite areas connected by a fabric hinge with the fabric coextensive from the composite through the hinge areas. Applicant's amendments make it clear that the same fabric layer or layers are used in both the composite and in the hinge.

A. Hettinga

The Examiner has rejected claims 41, 44 and 51 under 35 U.S.C. 102(e) as being anticipated by Hettinga (U.S. Patent No. 5,945,053). The Applicant respectfully traverses this ground for rejection since the Hettinga reference does not disclose or suggest the applicant's unique and advantageous method for making a hinged composite structure. In order to anticipate, a single prior art reference must disclose each and every element of the claimed invention. MPEP §2131; *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*,

221 U.S.P.Q. 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983)) ("Anticipation requires the presence in a single prior art reference, disclosure of each and every element of the claimed invention, arranged as in the claim.").

In the instant case, the Applicant's method is readily distinguishable from the methods disclosed by Hettinga. In the method of the instant claims, glass fabric and rigid thermoplastic resin are combined *throughout the structure*, except for a limited hinge region(s), to form the *coextensive* composite material in which the fabric is part of a composite in the major part of the structure. Due to the wetting and incorporation of the thermoplastic resin deep into the glass fabric, this composite has high quality physical properties.

"[W]e have found that the interaction, on a microscopic level, between the resin and the fabric, in one, two or more layers or plies of fabric, is an important element of the invention. The physical properties of an extruded member are improved when the polymer melt during extrusion of the linear member thoroughly wets and penetrates the fiber in the fabric. The thermoplastic material comprises an exterior continuous organic resin phase covering and intimately associated with reinforcing fiber/fabric." (See specification at p. 19, lines 27-33.)

A review of the disclosure in Hettinga, in contrast, discloses an invention with a limited amount of fabric in a fabric hinge and

"*at least some of the fibers* of the fabric hinge member are embedded into the first and the second members." Hettinga at column 1, lines 8-11; emphasis added.

Figure 8 depicts a fabric that barely contacts the first and second members and only contacts the members to sufficiently anchor the end of each hinge. The fabric disclosed in Hettinga does not provide reinforcement to the thermoplastic resin. Hettinga does *not* disclose the reinforcing nature of the fiber coextensive with the thermoplastic materials, a significant aspect of the instant application. Without the extensive penetration of the thermoplastic resin into glass fabric throughout the structural members, the invention of Hettinga lacks significant physical properties that the instant claims possess. Accordingly, the Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. §102(e).

B. Kaplo

The Examiner has rejected claims 41, 42, 51 and 52 under 35 U.S.C. 102(e) as being anticipated by Kaplo (U.S. Patent No. 6,294,729). The Applicant respectfully traverses this ground for rejection since the Kaplo reference does not disclose or suggest all of the applicant's claimed elements for making a hinged thermoplastic-fabric reinforced structural member. There is a key difference in the structure disclosed by Kaplo. In the electromagnetic interference shields of Kaplo, metallized fabric is utilized to provide an electrically conductive path. In contrast, the instant claims use solely glass fabric. Using metallized fabric would not duplicate the physical properties possessed by the instant claims and does not anticipate the glass fabric of the instant claims.

Additionally, the metallized fabric is exterior to the thermoplastic resin of the Kaplo invention. This is visualized in Figures 1C, 2 and 3. The thermoplastic resin does not penetrate the fibers of the metallized fabric. In Fig. 4, a tape of metallized fabric is introduced into the interior of a shaping dic, but the fabric is applied to the exterior of the thermoplastic resin. A key component of the instant claims is the coating step. During the coating, the thermoplastic resin penetrates the fabric and thermally bonds to the fibers. Thus, Kaplo's EMI shield does not disclose each and every element of the instant claims, methods to produce a hinged thermoplastic-fabric reinforced structural member. The Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. §102(e).

C. Kohl

The Examiner has rejected claim 45 under 35 U.S.C. § 102(b) as being anticipated by Kohl (U.S. Patent No. 4,788,088). The Applicant respectfully traverses the rejection. Kohl is also missing a key element of the instant claims and does not anticipate the instant claims. The instant claims are a method for producing a *hinged* thermoplastic-fabric reinforced structural member. The apparatus and method of making a reinforced plastic laminate structure does not disclose a *hinge*. In fact, the word "hinge" does not appear once within the disclosure or the claims of the Kohl reference. Without a hinge, Kohl is unable to anticipate the instant invention of a *hinged* thermoplastic-fabric reinforced structural member. Therefore, the Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b).

Rejections under 35 U.S.C. § 103A. Hettinga in view of Bernis and Kaplo

The Examiner has rejected claims 42, 52 and 53 under 35 U.S.C. 103(a) as being unpatentable over Hettinga, U.S. Patent No. 5,945,053 and further in view of Bernis, U.S. Patent No. 4,769,199, and Kaplo, U.S. Patent No. 6,294,729. The Applicant respectfully traverses the rejection. This combination does not suggest a composite with a fabric hinge, the fabric being coextensive with the composite regions and the hinge.

The Examiner has not established a *prima facie* case of obviousness. The three criteria of obviousness—a suggestion or motivation to combine references, a reasonable expectation of success, or the prior art reference teaches or suggests all the claim limitations—was not met in the office action. MPEP §2143; *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991); *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974).

The Applicant respectfully asserts that Bernis is non-analogous art and is thus unavailable as prior art. Two criteria have developed for determining whether prior art is analogous.

"First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved." *In re Deminski*, 796 F.2d 436, 442 (Fed. Cir. 1986).

The instant application and Bernis are from two different fields of endeavors. The instant claims relate to methods to produce structural fenestration units "such as windows and doors for residential and commercial architecture." Specification at p. 1, lines 25-26. In contrast, Bernis is in the furniture industry, and the invention is "channel-like raceways" to confine "electrical and/or communication cables." Bernis at column 1, lines 14-18. Additionally, Bernis is missing a key element of the instant claims—fabric reinforcement throughout the structure. Thus, Bernis is not in the same field of endeavor as the instant application and is not pertinent to the particular problem of the inventor, specifically a hinged composite with coextensive fabric reinforcement of thermoplastic.

"The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness." *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992).

A person having ordinary skill in the art trying to address problems relating to hinged thermoplastic-fabric reinforced structural members would not look to furniture raceways without fabric reinforcement. Therefore, Bemis should be unavailable as prior art.

The combined references fail to teach or suggest all of the instant claim limitations. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03; *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974). The cited references fail to teach or suggest a structural member with fabric reinforced thermoplastic resin. The coextensive fabric provides essential characteristics to the structural member.

"The members exhibit high quality physical properties because the fabric is intimately contacted and wetted by the resin and organic materials thereby incorporating resin deep within the fabric." Specification at p.7, lines 21-23.

Additionally, neither Hettinga nor Kaplo contemplate glass fabric. Kaplo discloses only metallized fabric. Kaplo at column 2, line 37. Hettinga contemplates many different types of fabric, but not glass. Hettinga at column 6, lines 20-25. The cited references fail to teach or suggest all of the limitations of the instant claims.

B. Kohl

The Examiner has rejected claim 45 under 35 U.S.C. 103(a) as being unpatentable over Kohl, U.S. Patent No. 4,788,088. The Applicant respectfully traverses the rejection. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03; *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974). Kohl does not teach or suggest all of the limitations of the instant claims. Kohl does not disclose a hinged structure, a key element of claim 45. Kohl contemplates "a wide variety of shapes." Kohl at column 8, lines 30-31. In the instant application, a hinge is not just another shape, but rather it is a functional part of the unit.

Additionally, Kohl fails to teach or suggest properties of rigid areas covered in claim 45, e.g., "a modulus of elasticity of about 830 kpsi or greater." See claim 45, line 13. Although the Examiner asserts that one of ordinary skill in the art could have selected the appropriate properties, these properties are not in the prior art for this invention as a whole. The properties claimed in claim 45 are novel for this invention as a whole. The Examiner has not established a *prima facie* case for obviousness over Kohl.

C. Bemis in view of Van Vliet and Shanok

The Examiner has rejected claims 41-54 under 35 U.S.C. § 103(a) as being unpatentable over Bemis, U.S. Patent No. 4,769,199 in view of Van Vliet, U.S. Patent No. 2,607,411 and Shanok et al., U.S. Patent No. 3,245,861. The Applicant respectfully traverses the rejection.

As discussed previously, Bemis is non-analogous art and should not be available as prior art. Van Vliet is also non-analogous art. Van Vliet teaches a hinge system for refrigerated cabinets (title of patent).

The "invention relates to an improvement in the hinging of two lids or covers...to close a horizontal opening in a cabinet," which "prevent[s] drip through the hinge to the goods stored below." Van Vliet at column 1, lines 2-6.

This invention is not within the field of producing structural fenestration units "such as windows and doors for residential and commercial architecture." Specification at p. 1, lines 25-26. Van Vliet should not be available as prior art either.

In addition, there is no motivation to combine these references from different fields to arrive at the claims as a whole.

"When the incentive to combine the teachings of the references is not readily apparent, it is the duty of the examiner to explain why combination of the reference teachings is proper." MPEP § 2142; *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1790 (B.P.A.I. 1986).

The Applicant asserts that a motivation to combine is not implicit within the cited references and the Examiner has not demonstrated a motivation to combine these references.

"[T]he Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious." *In re Rouffer*, 149 F.3d 1350, 1359 (Fed. Cir. 1998).

The Applicant asserts that there is no motivation to combine a reference from the furniture industry with a reference from cabinetry to arrive at an invention to produce fenestration units for home or commercial construction. The Examiner has not established a *prima facie* case of obviousness.

In view of the foregoing, the Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a).

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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Date


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